Alessandro Casa

CONTACT INFORMATION

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RESEARCH INTERESTS

Applied statistics; Latent variable models; Nonparametric statistics; Clustering; Computational statistics; Density estimation; Dimensionality reduction techniques; Graphical models; Chemometrics; Bayesian statistics.

CURRENT POSITION

Postdoctoral research fellow   since Nov. 2019
School of Mathematics and Statistics, University College Dublin
Affiliated with: Vistamilk SFI Research Centre
                   Insight SFI Research Centre for Data Analytics
Supervisor: Prof. T.B. Murphy

EDUCATION

Ph.D. in Statistics   Oct. 2016 - Feb. 2020
University of Padova
Thesis: *Climbing modes and exploring mixtures: a journey in density-based clustering*
Supervisor: Prof. G. Menardi and Prof. J.E.Chacòn (co-supervisor)

Master degree in Statistical Sciences   Oct. 2014 - Sept. 2016
University of Padova
Final grade: 110/110 cum laude
Thesis: *Semi-supervised detection of collective anomalies using non-parametric methods with an application to particle physics* (written in italian)
Supervisor: Prof. G. Menardi

Bachelor degree in Statistics, Economics and Finance   Oct. 2011 - July 2014
University of Padova
Final grade: 110/110 cum laude
Thesis: *Dimension reduction for model-based clustering: a simulation study and an application to genetic data* (written in italian)
Supervisor: Prof. G. Menardi

PUBLICATIONS

Working paper

- Frizzarin M., Bevilacqua A., Dhariyal B., Domijan K., Ferraccioli F., Hayes E., Ifrim G., Konkowleska A., Le Nguyen T., Mbaka U., Ranzato G., Singh A., Stefanucci M. & Casa A.
Mid-infrared spectroscopy and milk quality traits: a modelling and data analysis competition during the "International Workshop of Spectroscopy and Chemometrics 2021"

- Frizzarin M., O'Callaghan, T.F., Murphy, T.B. & Casa, A.
Discriminate pasture and concentrate diet in Irish cows using machine learning methods applied on the milk mid-infrared spectra

- Frizzarin M., Gormely I.C., Berry D.P., Murphy T.B., Casa A. & McParland S.
Global and local statistical approaches for predicting dairy cow milk quality traits from routinely available milk spectra

- Cappozzo A., Casa A. & Fop M.
Matrix-variate data sparse Model Based Clustering

Submitted preprints

- Casa A., Cappozzo A. & Fop M. (2021+)
  Group-wise shrinkage for multiclass Gaussian Graphical Models
  Preprint available at: https://arxiv.org/pdf/2105.07935.pdf

- Stakia A., Dorigo T., Banelli G., Bortoletto D., Casa A., de Castro P., Delaere C., Donini J., Finos L., Gallinaro M., Giammanco A., Held A., Jimenez Morales F., Kotkowski G., Pei Liew S., Maltoni F., Menardi G., Papavergou I., Saggio A., Scarpa B., Strong G.C., Tosciri C., Varela J., Vischia P. & Weiler A. (2021+)
  Advanced multi-variate analysis methods for new physics searches at the Large Hadron Collider
  Preprint available at: https://arxiv.org/pdf/2105.07530.pdf

- Casa A., Bouveyron C., Erosheva E. & Menardi G. (2021+)
  Co-clustering of time-dependent data via Shape Invariant Model
  Preprint available at: https://arxiv.org/pdf/2104.03083.pdf

- Casa A., O'Callaghan T.F. & Murphy, T.B. (2021+)
  Parsimonious Bayesian Factor Analysis for modelling latent structure in spectroscopy data.
  Preprint available at: https://arxiv.org/pdf/2101.12499.pdf

- Casa A. & Menardi, G. (2021+)
  Nonparametric semi-supervised classification with application to signal detection in high energy physics.
  Preprint available at: https://arxiv.org/pdf/1809.02977.pdf

Article in refereed journals

- Casa A., Fop, M. & Murphy, T.B. (2021)
  Contributed discussion on: "Centered partition processes; informative priors for clustering" by Paganin, S., Herring, A.H., Olshan, A.F. & Dunson, D.B.
  Bayesian Analysis 16(1), 301–370

- Frizzarin M., Gormley I.C., Berry D.P., Murphy T.B., Casa A., Lynch A. & McParland S. (2021)
  Predicting dairy cow milk quality traits from routinely available milk spectra using statistical machine learning methods.
  Journal of Dairy Science, https://doi.org/10.3168/jds.2020-19576

- Casa A., Scrucca L. & Menardi G. (2020)
  Better than the best? Answers via model ensemble in density-based clustering
  Advances in Data Analysis and Classification, 1–25

- Casa A., Chacòn J.E. & Menardi, G. (2020)
  Modal clustering asymptotics with applications to bandwidth selection.
  Electronic Journal of Statistics 14(1), 835–856

- Casa A. (2018)
  On the choice of the weight function for the integrated likelihood.
  SM Journal of Biometrics & Biostatistics, 3(3), 1033

Book chapters

- Cabassi A., Casa A., Farcomeni A., Fontana M., Russo, M. (2018).
  Three testing perspectives on connectome data.
  Studies in Neural Data Science, Springer Volume 'Proceedings in Mathematics & Statistics', ISBN-9783030000394.

Refereed conference proceedings

- Casa A., Chacòn J.E. & Menardi G. (2019)
  Asymptotics for bandwidth selection in nonparametric clustering.
  Cladag 2019 - Book of short papers.

- Casa A. & Menardi G. (2019)
  Nonparametric semisupervised classification and variable selection for new physics

searches.
EMS 2019 - Program and Book of Abstracts.

- Pascali G., Casa A. & Menardi G. (2019)
  Co-clustering TripAdvisor data for personalized recommendations.
  Book of short Papers SIS 2019. ISBN 978889191510.

- Casa A., Scrucca L. & Menardi G. (2018)
  Averaging via stacking in model-based clustering.
  Book of abstracts of the 4th International Workshop on Model-Based Clustering
  and Classification (MBC2)

- Casa A., Scrucca L. & Menardi G. (2018)
  On the selection uncertainty in parametric clustering.
  Book of abstracts of the European Conference on Data Analysis (ECDA).

- Casa A., Chacòn J.E. & Menardi G. (2018)
  On the choice of an appropriate bandwidth for modal clustering.
  Book of short Papers SIS 2018. ISBN-9788891910233.

- Casa A., Chacòn J.E. & Menardi G. (2018)
  Clustering-oriented selction of the amount of smoothing in kernel density estimation.
  Book of abstracts - ISNPS 2018. ISBN: 978-88-61970- 00-7.

- Casa A. & Menardi G. (2017)
  Signal detection in high energy physics via a semisupervised nonparametric approach.
  Proceedings of the Conference of the Italian Statistical Society "Statistics and
  Data Sciences: new challenges, new generations". ISBN: 978-88-6453-521-0.

- Casa A. & Menardi G. (2017)
  *Nonparametric semi-supervised classification with application to signal detection in
  high energy physics*.
  Books of abstracts of the International Federation of Classification Societies (IFCS).

VISITING PERIODS

University of Cote d'Azur   Oct. 2018 - Dec. 2018
Laboratory J.A. Dieudonnè
Visiting scholar under the supervision of Prof. C. Bouveyron

University of Perugia   Apr. 2018
Department of Economics
Visiting scholar under the supervision of Prof. L. Scrucca

University of Cambridge   Oct. 2017 - Dec. 2017
Department of Pure mathematics and Mathematical Sciences
Visiting scholar under the supervision of Prof. R.Samworth

CONFERENCES PRESENTATIONS

- CASI - 41st Conference on Applied Statistics in Ireland
  Online [Talk]   May 2021

- UCD Working Group on Statistical Learning
  Online [Invited seminar]   Feb. 2021

- UCD Working Group on Statistical Learning
  Dublin [Invited seminar]   Feb. 2020

- CLADAG - Classification and Data Analaysis Group
  Cassino [Invited talk]   Sept. 2019

- EMS - European Meeting of Statisticians
  Palermo [Invited talk]   Jul. 2019

- WG19 - Working Group on Model-Based clustering
  Wien [Poster]   Jul. 2019

- ASPD - Workshop on Advanced Statistics for Physics Discovery
  Padova [Poster]   Sept. 2018

- MBC2 - Workshop on Model-Based Clustering and Classification
  Catania [Poster]   Sept. 2018

- ECDA - European Conference on Data Analysis
  Paderborn [Talk]   Jul. 2018

- SIS - 49th Scientific meeting of the Italian Statistical Society
  Palermo [Talk]   Jun. 2018

- ISNPS - 4th Conference of the International Society for Nonparametric Statistics
  Salerno [Talk]   Jun. 2018

- SIS - Intermediate conference of the Italian Statistical Society
  Florence [Talk]   Jun. 2017

Other presentations
- Vistamilk Annual Conference
  Online   Mar. 2021

- Vistamilk SFI Site Review
  Online   Oct. 2020

- Start Up Research - Follow up presentation (joint with A.Cabassi)
  Palermo   Jun. 2018

COMPUTER SKILLS

OS and Applications: Mac OS, Microsoft Windows, Linux, OpenOffice
Programming languages: R (advanced), Python, SQL, Stata, SAS, C/C++
Markup: LaTeX, HTML, Markdown

TEACHING

Teaching Experience
University College Dublin
- Instructor for the module STAT20060 - Statistics & Probability
  Level 2, Academic year 2019/2020.

- Tutor for the module STAT30270/40590 - Statistical Machine Learning
  Level 3, Academic year 2019/2020.

- Tutor for the module STAT20060 - Statistics & Probability
  Level 2, Academic year 2019/2020.

University of Padova
- *Bike sharing in Paris: a case study* (in italian).
  Specialist lecture during the class Statistica Iterazione
  Master degree, Academic year 2018/19.

Supervising Experience
- PhD Thesis co-supervision: Gerardina Celentano (University College Dublin, expected 2025, supervisor: Brendan Murphy)

- MSc Thesis co-supervision: Giulia Pascali (University of Padova, a.y. 2018/19, supervisor: Giovanna Menardi)

OTHER ACTIVITIES

- International Workshop on Spectroscopy and Chemometrics   Apr. 2021
  Academic Lead of the organizing committee of the inaugural edition

- VistaMilk IR Meeting   2020-Present
  Co-organizer of the VistaMilk Infrared Spectroscopy group monthly meeting.

- Start Up Research - Follow up   Jun. 2018
  Follow up meeting where the research groups present and discuss the scientific output of their works after one year of research.

- Start Up research   Jun. 2017
  Meeting where small research groups of young scholars, advised by senior researchers, are asked to develop innovative methods and models to analyze a common dataset.

- Elected representative of Ph.D. students and Postdoctoral researchers
  in the Faculty Board (University of Padova)   2016-2020

- Elected representative of Ph.D. students in the Doctoral Board of
  the Grad School (University of Padova)   2016-2019

- Member of the Irish Statistical Association

Editorial Activities

- Referee for: Annals of Applied Statistics, Computational Statatistics and Data Analysis, Journal of Dairy Science, Knowledge-based Systems, Mathematics, Social Indicators Research, Stat, Statistical Analysis and Data Mining, Statistics and Computing, WIREs Computational Statistics.

Data Analysis Contests

- Stats Under the Stars 3   Jun. 2017
  Organizers: University of Florence, Italian Statistical Society

- Stats Under the Stars 1   Sept. 2015
  Organizers: University of Padova, Italian Statistical Society

- Data Science Game   Jun. 2015
  Organizers: Google, Capgemini